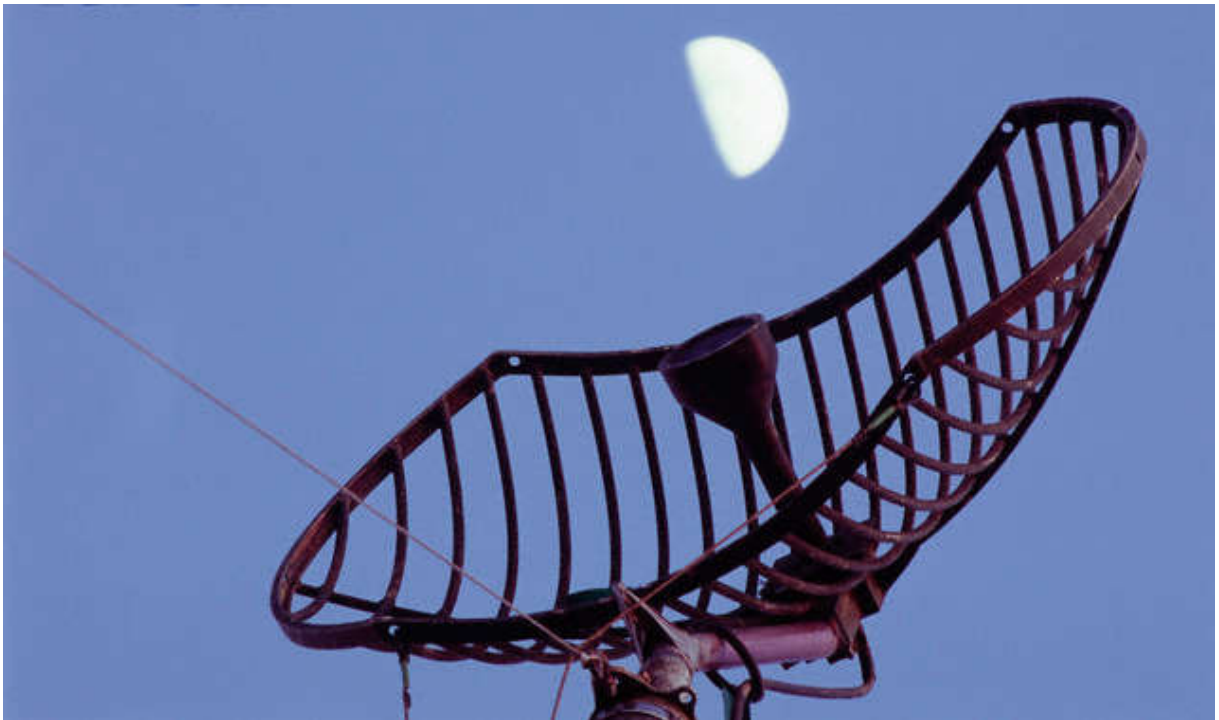


# ***V-WLAN2000 Series***



## ***Technical Specification Manual***



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Author: Veesta World Co., Engineering Department



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## **Chapter 1 - Introduction**

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### **1.1 General Information**

This is technical information of design of V-WLAN2000 Series, the Wireless LAN Units from Veesta World Company. This document helps you to find about how V-WLAN2000 Series works and designed for your purpose.

V-WLAN2000 Series of WLAN system adopted for from very small Network infrastructure from that can be used in as remote terminal unit up to very large scale Wireless LAN, Repeaters, Bridges, Distribution System for Customer Premises Equipment, Access Point Routers and Mesh Network backhaul.

Veesta World Co. from Iran associated with you! In planning, designing, manufacturing, supply, installation, commissioning and acceptance test for the Wireless Networks Units in your projects. Veesta World Company will render full support and services to its customer to enable them to deliver first class services to the Telecommunication and Automation Market.

### **1.2 Veesta World Co**



Veesta World Co is a leading company in automation field in Iran and specialized in design and installation of IT Network of wide area and local area, Automation control units, control rooms, DCS design, PLC and SCADA application installation and system integration. The main advantage of Veesta World's products is complying international standards and do customs basic design.

Veesta World Co is a dynamic company located in the Tehran, IRAN, whose main commitment is the customer's satisfaction. Business vision and its future evolution together with the proper combination of new and existing technologies are the main aspects considered in the solutions proposed by Veesta World Co. Owing to this, key issues like Scalability, the Return of Investment or the Total Cost of Ownership are carefully considered. Consequently, the solutions offered by Veesta World Co are able to cope with the requirements of a sustainable growth. Veesta World Co is a service-oriented company and the customer perspective is its action guide. An added value of the offer is the evaluation and Management of the risk. This

issue is getting a major relevance in the changing environment in which new technologies have to be applied, particularly when profitability is a major concern.

The objective of Veesta World Co is focused on the creation of value for the customer through the proper business strategy alignment and the right combination of technologies. These principles, developed under the Total Quality Management practice, allow Veesta World Co to offer, in a seamless approach, consultancy, engineering and training services.

The founders of Veesta World Co are professionals with a large experience in the Telecommunication and Networking and Industrial fields.

Veesta World Co is formed by a balanced team of professionals that gather knowledge in a wide range of technologies and specific know-how on how to apply these technologies in mission-critical control networks.

### **1.3 Copyrights**

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*Figure 1-1: Veesta World Co Logo and sign*

## Chapter 2 - V-WLAN2000 Series Overview

### 2.1 Overview

In the wireless classification schema (Figure 2-1) the V-WLAN2000 Series (Veesta Wireless LAN) emphasize on developing stable and reliable communication infrastructure to provide outstanding performance at superior coverage and high-speed transmission quality. Users can roam up to 30km outdoors with a high-speed transfer rate to set up their own wireless network for voice, data, and video transmission easily.

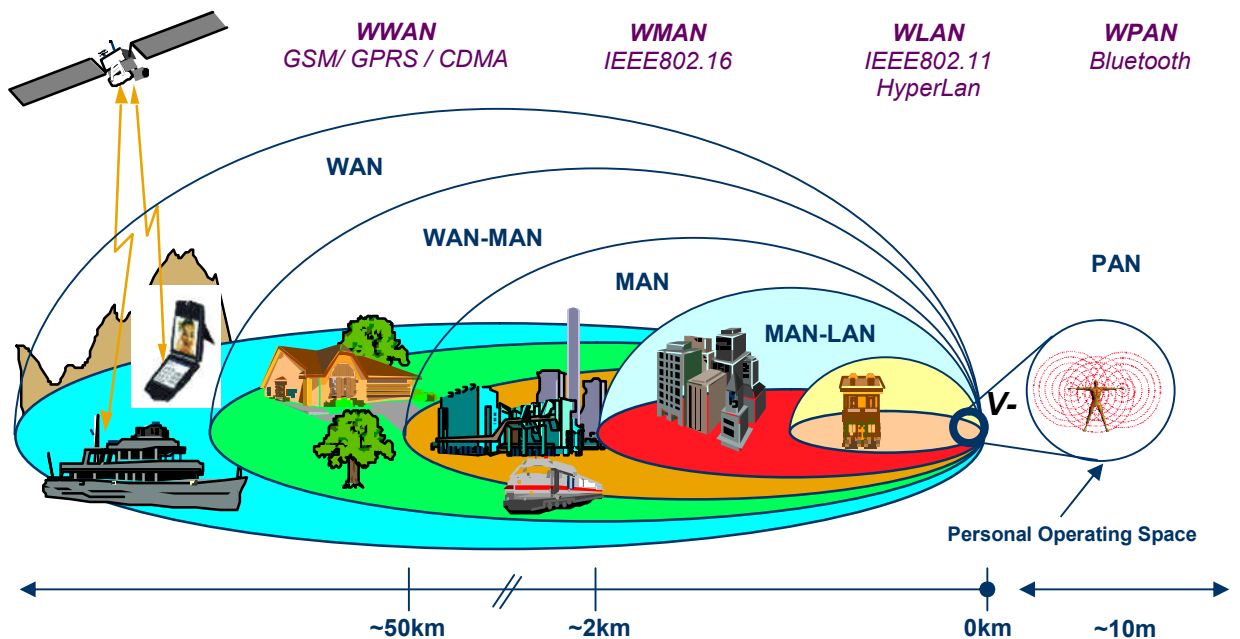


Figure 2-1: Wireless Classification Schema

The great output power and high sensitivity of V-WLAN2000 Series extend the wireless coverage and achieve excellent transmission quality. Furthermore, we also develop power amplifier and antenna splitter to meet various installation demands.

Quality control is another crucial aspect in the operations of V-WLAN2000 Series. It is important that the minor defects are kept to the very minimum to ensure customer satisfaction. Every unit

receives its own serial number after the final quality control inspection has been completed and evaluated.

The V-WLAN2000 Series is a highly customize system that can be deployed as a traditional fixed wireless Access Point and in the meantime can be expanded wireless services as WDS and stand as Customer Premises Equipment CPE.

## 2.2 V-WLAN2000 Wireless network basics

### 2.2.1 Wireless Access Point

The most basic mode of multi-function is Access Point. In this mode, the AP will act as a central hub for different Wireless LAN clients. Some hotspot APs requires 802.1x authenticator function to authenticate a user before providing Internet service.

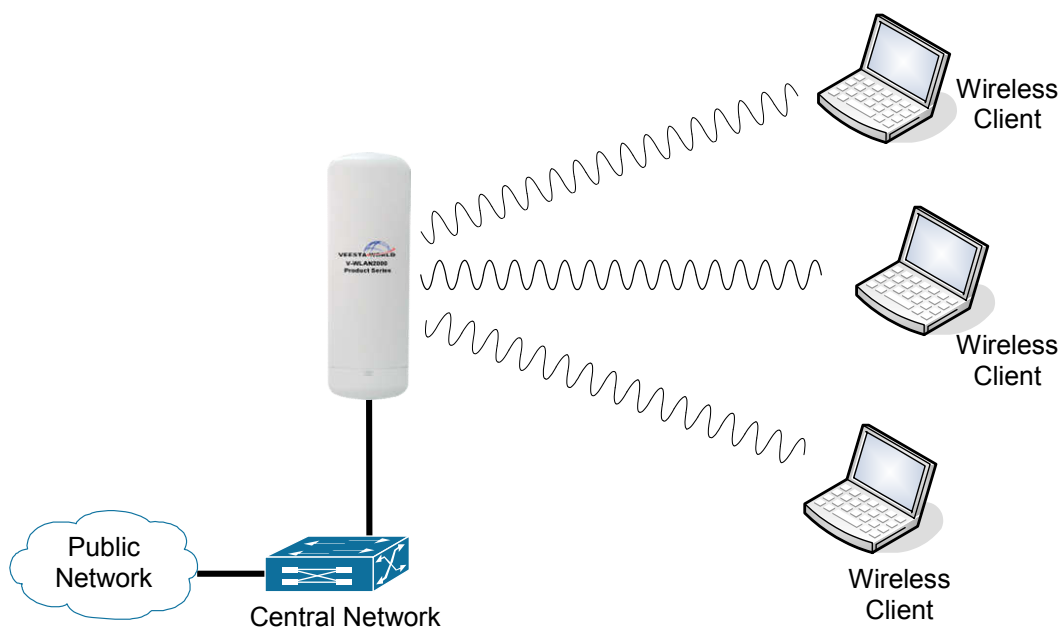


Figure 2-2: V-WLAN2000 Series as Wireless Access Point Mode Diagram

### 2.2.2 Wireless Bridge Mode

In this mode, 2 access points in two remote locations connect to each other to provide a wireless bridge between 2 remote LANs. It is mostly used by enterprise to connect 2 remote office's network together. The bridge modes are connected by using the Master-Slave and or the WDS (Wireless Distribution System) or Ad-hoc topology.



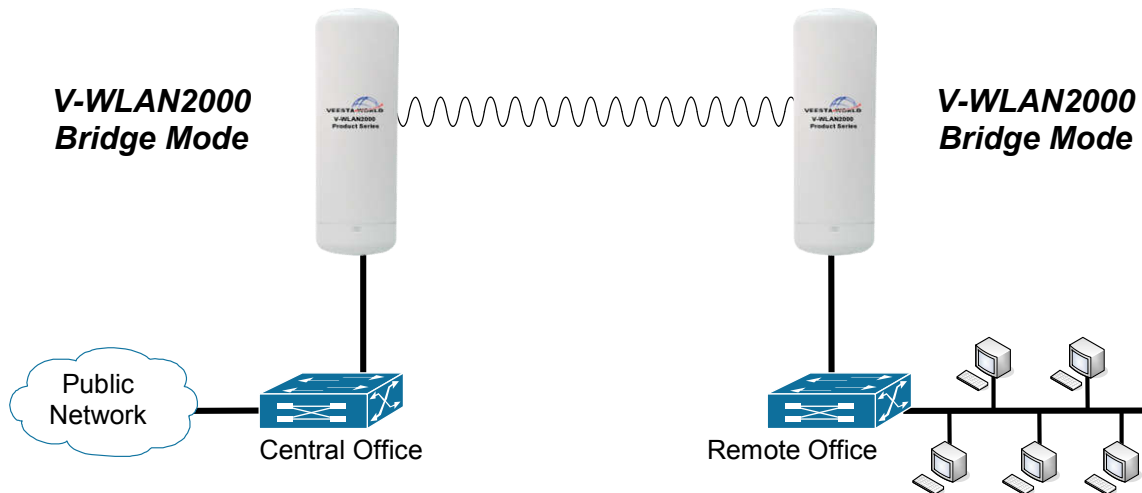


Figure 2-3: V-WLAN2000 Series as Wireless Bridge Mode Diagram

### 2.2.3 Wireless WDS Repeater

A repeater's function is to extend the wireless coverage of another wireless AP or router. For WDS repeater to work, the remote wireless AP/Router must also support WDS function

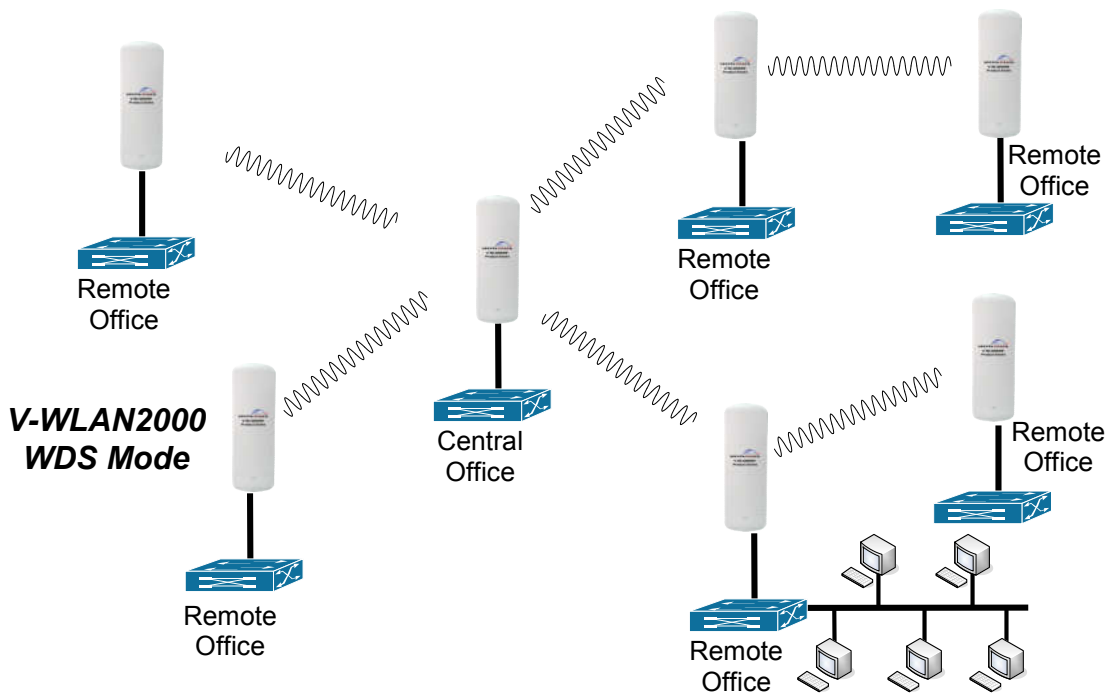


Figure 2-4: V-WLAN2000 Series as Wireless Distribution Service Mode Diagram

## 2.2.4 Wireless Universal Repeater

A universal repeater can also extend the wireless coverage of another wireless AP or router. But the universal repeater does not require the remote device to have WDS function. Therefore, it can work with almost any wireless device.

## 2.2.5 Wireless WISP Mode

In WISP mode, the AP will behave just the same as the Client mode for wireless function. However, router functions are added between the wireless WAN side and the Ethernet LAN side. Therefore, the WISP subscriber can share the WISP connection without the need for extra router.

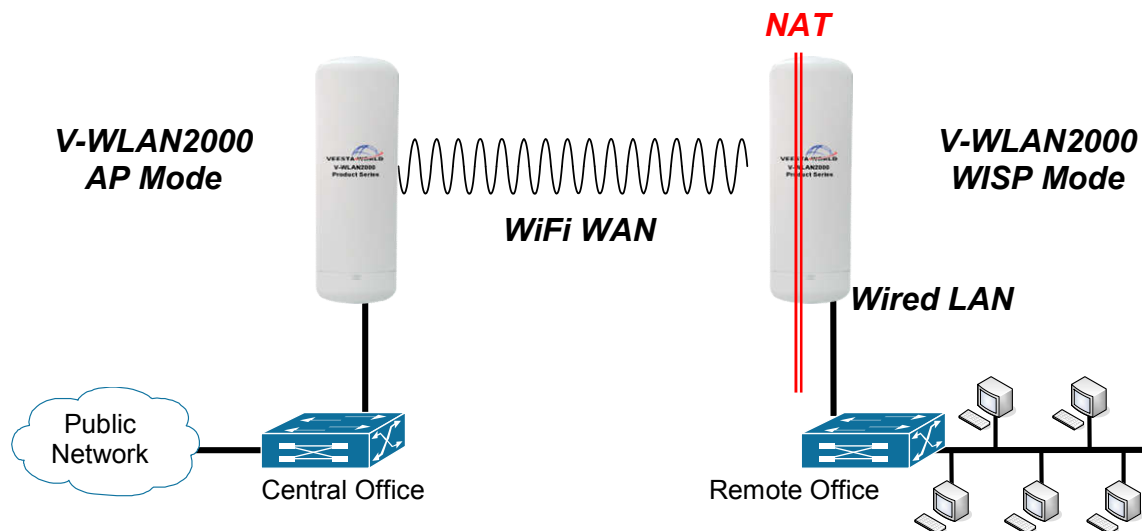


Figure 2-5: V-WLAN2000 Series as Wireless WISP Mode Diagram

## 2.2.6 Wireless Client Mode

It is also known as Ethernet Client. In this mode, the AP will act as a WLAN card to connect with the remote AP. Users can connect PC or local LAN to the Ethernet port of the client mode AP. This mode is mostly used as a CPE device for WISP subscriber.

## 2.2.7 Wireless Gateway Mode

In gateway mode, the AP will behave like a broadband router. One of the LAN port will behave as a WAN port for wired connection to ADSL or Cable modem. The NAT routing will be performed between the WAN and LAN Port. Making IP sharing possible

## 2.2.8 Wireless Mesh Network Mode (WMN)

Wireless Mesh Networks (WMN) is the networks in which each node can communicate directly with one or more peer nodes.

Each node operates not only as a host but also as a router, forwarding packets on behalf of other nodes that may not be within direct wireless transmission range of their destinations.

It is dynamically self-organized and self-configured; nodes can automatically establishing and maintaining mesh connectivity among nodes.

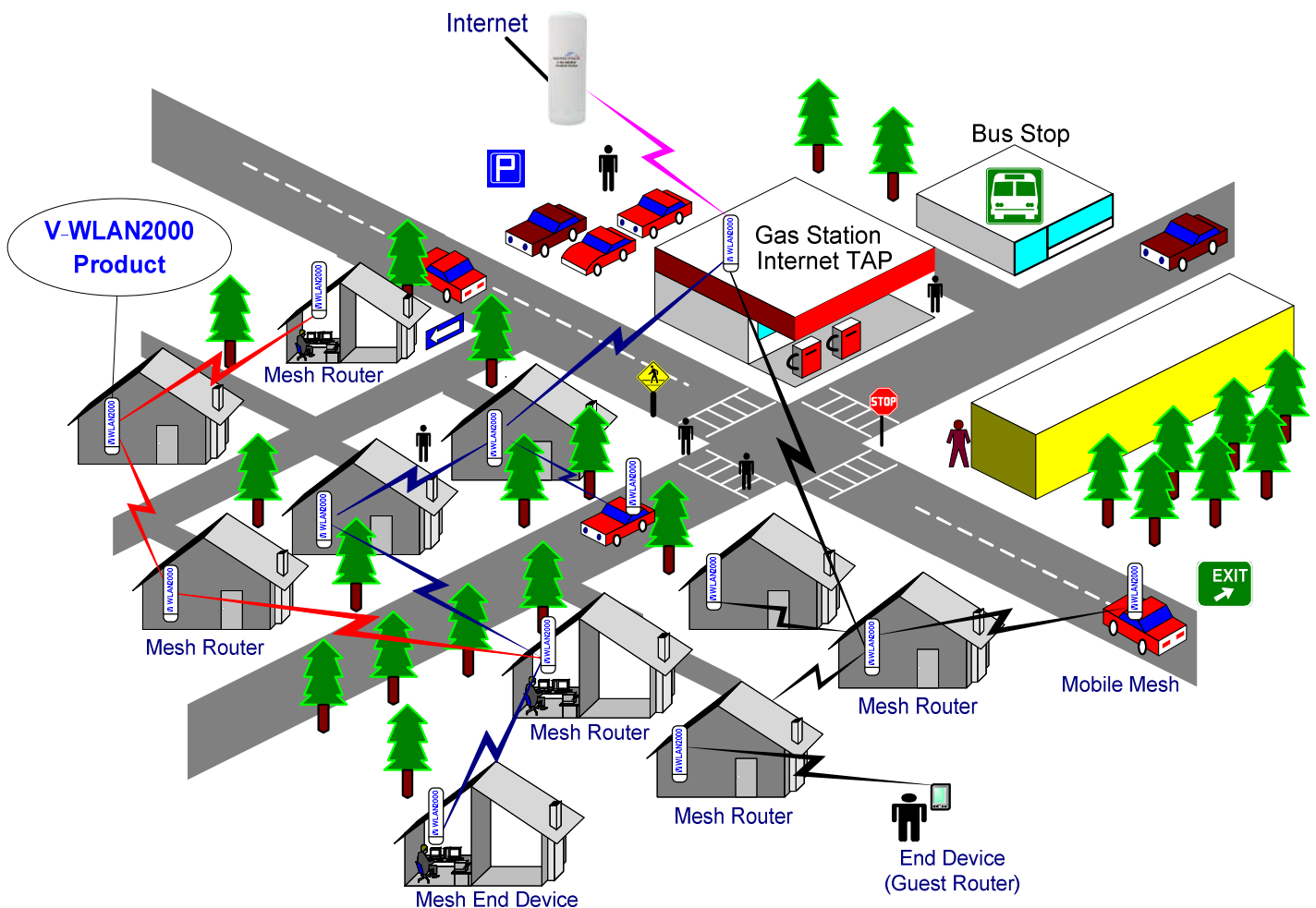


Figure 2-6: V-WLAN2000 Series as Wireless Mesh Network Mode Diagram

## 2.3 V-WLAN2000 Series Product List

Table 2-1: V-WLAN2000 Series Product Models

No.	VEESTA Model	Specification
1	VW-25N30 ↓	Frequency 5.250~5.350, 5.470~5.725, 5.725-5.850 GHz Power 30 dBm (1000mW) outdoor Radio. 2xTR, 2xTX Multi Input Multi Output (MIMO) Technology. 802.11a+802.11n protocol. 2x External RPSMA Antenna Connector. 12~24VDC Power Supply passive PoE
2	-14	With Integrated Dual Polarity 14dBi, PCB Antenna. Radio modem should order separately from base unit above model.
3	-23	With Dual Polarity 37cm diameter Solid Dish Antenna, in 9 degree and High Performance link 23dBi for 18km distance.
4	-26	With Dual Polarity 48cm diameter Solid Dish Antenna, in 7.5 degree and High Performance link 26dBi for 25km distance.
5	-29	With Dual Polarity 68cm diameter Solid Dish Antenna, in 4 degree and High Performance link 29dBi for 35km distance.

Example Oder:

- VW-25N30 It is just radio modem device as listed above
- VW-25N30-26 It is radio modem device as listed above plus the 26dBi high gain antenna.
- VW-25N30-14 It is radio modem device without RPSMA Antenna connector and it is integrated into the its box the 14dBi PCB Antenna.

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## **Chapter 3 - V-WLAN2000 Series Features**

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### **3.1 General**

V-WLAN2000 Series product an outdoor High Power bridge is the point of connection to Wireless Outdoor Network for service provider deploying last mile services to business or residential broadband subscribers. Network administrators can create multiple subscriber service tier using per-subscriber rate limiting features, and manage centrally. V-WLAN2000 Series outdoor WISP Bridge utilizes a high transmission power. The outdoor bridge may connect to the WiFi mesh or WDS infrastructure and provides the subscriber with an Ethernet connection for a local access.

V-WLAN2000 Series outdoor high power Bridge supports four operational modes, the AP mode and the WDS mode and the CPE mode and Mesh ad-hoc mode, respectively with built-in remote management features simplify the deployment and reduce cost for continued maintenance of the outdoor bridge.

### **3.2 Common High Lights**

- Operation Modes: Access Point, Repeater(WDS) ,Bridge, CPE, Mesh, Ad-hoc
- Topology: Point to Point, Point to Multi Point, Multi Point to Multi Point, Mobile
- Maximum Security with 802.1x, WPA, and AES
- Support Wireless Mesh Network
- Integrated Power over Ethernet (PoE)
- Multiple Virtual AP & Capability of Client Isolation
- Business-class WLAN Security and Client Authentications
- Provide Advanced Wireless Setting (ACK/CTS )
- Support Web management
- Over load current protection
- Wide Range Voltage support (12-24VDC)
- Integrated Power over Ethernet (PoE)
- Weather-Proof Housing (IP 68 Approved)

### **3.3 Common Software Feature**

#### **3.3.1 Wireless Architecture Mode**

- AP Mode
- WDS Mode (Repeater / Bridge / MESH)
- CPE Mode

### **3.3.2 Access Point Feature**

- Number of ESSID : 4
- Number of associated clients per AP : 32
- Support up to 4 WDS links
- Wireless Mode : AP Mode, WDS Mode, and CPE Mode
- WDS Mode: to extend wireless coverage by connecting wirelessly to another WDS capable AP.
- Slot Time, ACK/CTS Timeout
- RSSI threshold support
- Distance optimization: adjustable to best adapt to the deployment environment
- RTS and fragmentation control
- Adjustable transmission power : 1dBm step
- Wireless site survey: for scanning the surrounding access points for connection
- VLAN tag support
- Firewall Support
- Router functions

### **3.3.3 Gateway Function in the CPE Mode**

- Built-in NAT mode : to support IP sharing on the LAN side for multiple users (subscribers) to get access to the Internet
- Built-in DHCP server for issuing local IP address
- Built-in DNS client
- IP/Port forwarding
- IP/MAC rule filtering

### **3.3.4 Authentication/Encryption (Wireless Security)**

- Data encryption: WEP(64/128/152-bits) , WPA/WPA2 with TKIP or AES-CCMP
- User Authentication: WEP, IEEE802.1X, WPA-PSK, WPA-Enterprise , MAC ACL
- Setting for TKIP/CCMP/AES key's refreshing period
- Support IEEE802.11 mixed mode, open and shared key authentication
- Hidden ESSID: broadcast SSID option can be turn off to prevent SSID broadcast to the public
- Station Isolation setting: when enabled, all stations associated with this AP can not communicate with each other
- Support data encryption over WDS link

### **3.3.5 Networking**

- Support Static IP, Dynamic IP(DHCP Client) and WiFi WAN Connection
- MAC Cloning
- DHCP Server
- 802.3 Bridging
- Masquerading (NAT)
- Proxy DNS
- Dynamic DNS
- Virtual Server (IP / Port Forwarding)
- Support MAC Filter
- Support IP Filter
- IPv6 Routing Advertisement Daemon
- Level 2 intelligent Mesh Protocol routing

### **3.3.6 Management**

- Web-Based management interface
- Remote configuration and management
- Remote firmware upgradeable
- Software one-button-click to reset back to factory defaults
- Utilities for system configuration backup and restoration
- NTP time synchronization
- Syslog client
- Support Event log
- Support statistics on total transmission encountered and transmitting error occurred

## **3.4 Hardware Specification**

### **3.4.1 Base Platform**

- 1. Processor** : Highly integrated single chip access point solution, including integrated 32-bit MIPS processor 400MHz , multiprotocol MAC/baseband and Radio
- 2. Wireless Radio** : WiFi-G, 2.4GHz for models of VW-22Nxx and WiFi-G, 5GHz for models of VW-25Nxx
- 3. Standards Conformance** : IEEE 802.3 / IEEE 802.3u
- 4. Network Ports** : 2 \*100/1000Mbps Ethernet ports:
  - IEEE 802.3, 802.3u compliant
  - CSMA/CD 100/1000 auto sense
  - Power over Ethernet
- 5. Flash** : 8MB
- 6. SDRAM** : 32MB
- 7. LED Indications** : Power, 2x LAN, Wireless, Wireless Strength

### **3.4.2 Wireless Specifications**

- 1. RF Module** : From 5.7 to 5.8 GHz for VW-25Nxx type  
Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- 2. Network Standards Conformance** : IEEE 802.11a/n compliant
- 3. Media Access Protocol** : CSMA/CA with ACK
- 4. Distance Optimization** : Software Programmable distance optimization in meter units
- 5. Transmit Power(TX)** : Adjustable in 1dBm step
- 6. Frequency Response** :  $\pm 1$ dB over operating range



- 7. Output Power (dBm)** : IEEE802.11a: 6Mbps @ 29 ±2 dBm  
9Mbps @ 29 ±2 dBm  
12Mbps @ 29 ±2 dBm  
18Mbps @ 29 ±2 dBm  
24Mbps @ 29 ±2 dBm  
36Mbps @ 27 ±2 dBm  
48Mbps @ 25 ±2 dBm  
54Mbps @ 24 ±2 dBm
- IEEE802.11n: MCS0 @ 29 ±2 dBm  
MCS3 @ 29 ±2 dBm  
MCS8 @ 29 ±2 dBm  
MCS9 @ 29 ±2 dBm  
MCS12 @ 28 ±2 dBm  
MCS15 @ 23 ±2 dBm
- 8. Receive Sensitivity (dB)** : IEEE802.11a: 6Mbps @ -92 dB  
9Mbps @ -89 dB  
12Mbps @ -86 dB  
18Mbps @ -83 dB  
24Mbps @ -81 dB  
36Mbps @ -78 dB  
48Mbps @ -75 dB  
54Mbps @ -73 dB
- IEEE802.11n: MCS0 @ -94 dB  
MCS3 @ -84 dB  
MCS8 @ -93 dB  
MCS9 @ -91 dB  
MCS12 @ -82 dB  
MCS15 @ -73 dB

### **3.4.3 Electrical Specification**

- 1. Power Consumption** : 9 W
- 2. Over Load Current Protection** : 1.1 A
- 3. Input Power** : 12 - 24 VDC  
(220VAC via PoE adaptor)

### **3.4.4 Mechanical Specification**

- 1. Antenna Connector** : 2 \* RPSMA Male Connector for External Antenna Models only
- 2. Ethernet Connector** : 2 \* Ethernet Connector, PoE Enabled
- 3. Unit Dimensions** : 28(L) x 10(W) x 5(H) cm
- 4. Unit Weight** : 0.4 KG
- 5. Form Factor** : Wall Mount, Pole Mount and Reflector Mount Ability  
PVC Enclosure with IP67/68 Rating

### **3.4.5 Environmental Specification**

- 1. Operating Temperature** : -30 °C ~ 60 °C
- 2. Storage Temperature** : -30 °C ~ 85 °C
- 3. Operating Humidity** : 100% Non-Condensing
- 4. Storage Humidity** : 100% Non-Condensing



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